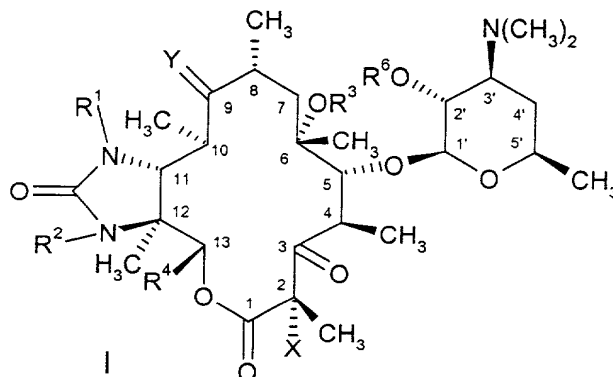


What is claimed is:

1. A compound of the formula



or a pharmaceutically acceptable salt, prodrug, or solvate thereof, wherein:

5 X is Cl, Br, I, or F;

Y is =O, or =NOR⁵; or Y means both -H and -OR⁵; or both -H and -NR⁵R¹⁰;

R¹, R², and R³ are independently selected from H, C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, (4- to 10-membered heterocyclic) C₁-C₆ alkyl, (4- to 10-membered heterocyclic) C₂-C₆ alkenyl, (4- to 10-membered heterocyclic) C₂-C₆ alkynyl, (C₆-C₁₀ aryl) C₁-C₆ alkyl, (C₆-C₁₀ aryl) C₂-C₆ alkenyl, and (C₆-C₁₀ aryl) C₂-C₆ alkynyl wherein said alkyl moieties of the foregoing groups are optionally substituted by halo or C₁-C₆ alkyl, and wherein said heterocyclic moieties are optionally substituted by 4- to 10-membered heterocyclic, (4- to 10-membered heterocyclic) C₁-C₆ alkyl, or (C₆-C₁₀ aryl) C₁-C₆ alkyl, and further wherein the aryl and heterocyclic moieties of each of the foregoing groups and optional substituents is optionally substituted by 1 to 4 R⁷ groups;

R⁴ is selected from H, C₁-C₁₀ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, (C₁-C₆ alkoxy) C₁-C₆ alkyl, (C₁-C₆ alkylthio) C₁-C₆ alkyl, (C₅-C₈ cycloalkyl) C₂-C₅ alpha branched alkyl, C₃-C₈ cycloalkyl, C₅-C₈ cycloalkenyl, 3 to 6 membered O or S containing heterocyclic group, or phenyl, wherein each R⁴ group may be substituted with from 1 to 3 substituents independently selected from hydroxy, halo, (C₆-C₁₀ aryl) C₂-C₆ alkenyl, and C₁-C₄ alkyl;

R⁵ and R¹⁰ are independently selected from H, C₁-C₆ alkyl, C₆-C₁₀ aryl, 4- to 10-membered heterocyclic, (4- to 10-membered heterocyclic) C₁-C₆ alkyl and (C₆-C₁₀ aryl) C₁-C₆ alkyl, wherein said aryl and heterocyclic groups are optionally substituted by 1 to 4 R⁷ groups;

R⁶ is H, -C(O)C₁-C₆ alkyl, benzyl, benzyloxycarbonyl, or (C₁-C₆ alkyl)₃ silyl;

25 R⁷ is independently selected from halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, -C(O)R⁸, -C(O)OR⁸, -OC(O)R⁸, -NR⁸C(O)R⁹, -C(O)NR⁸R⁹, -NR⁸R⁹, hydroxy, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₆-C₁₀ aryl, 4- to 10-membered heterocyclic, and C₁-C₆ alkoxy; and



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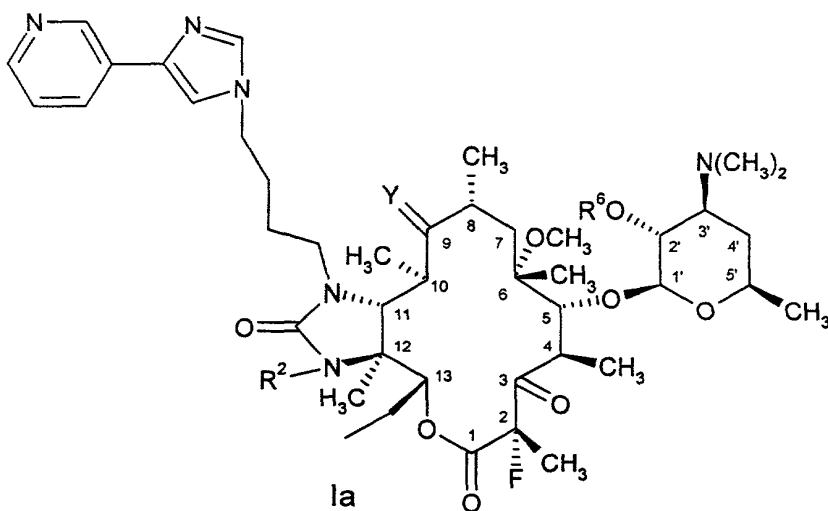
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each R^8 and R^9 is independently selected from H, C_1 - C_6 alkyl, C_6 - C_{10} aryl, and 4- to 10-membered heterocyclic.

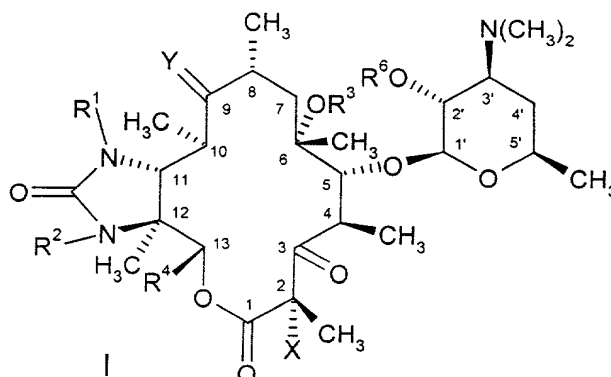
2. The compound of claim 1 wherein Y is =O or =NOR⁵, R¹ is (4- to 10-membered heterocyclic) C_1 - C_6 alkyl substituted by 4- to 10-membered heterocyclic, R² is C_1 - C_{10} alkyl or
- 5 C_2 - C_{10} alkenyl, R³ is C_1 - C_6 alkyl, R⁴ is ethyl, R⁵ is C_1 - C_6 alkyl, and R⁶ is H.

3. The compound of claim 1 of the formula



or a pharmaceutically acceptable salt thereof wherein:

- 10 Y is =O or =NOR⁵;
R² is C_1 - C_{10} alkyl or C_2 - C_{10} alkenyl; and
R⁶ is H, -C(O) C_1 - C_6 alkyl, benzyl, benzyloxycarbonyl, or (C_1 - C_6 alkyl)₃ silyl.
4. The compound of claim 3 wherein Y is =O and R⁶ is H.
5. The compound of claim 3 wherein Y is =NOR⁵ and R⁶ is H.
- 15 6. The compound of claim 4 wherein R² is CH₃, CH₂CH₃, CH₂CH=CH₂, *trans*-CH₂CH=CHCH₃, *trans*-CH₂CH=CHCH₂CH₃, or *trans*-CH₂-CH=C(CH₃)CH₂CH₂CH=(CH₃)CH₃.
7. A method of preparing a compound of formula I



or a pharmaceutically acceptable salt, prodrug, or solvate thereof, wherein

X is Cl, Br, I, or F;

Y is =O, or =NOR⁵; or Y means both -H and -OR⁵; or both -H and -NR⁵R¹⁰;

5 R¹, R², and R³ are independently selected from H, C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, (4- to 10-membered heterocyclic) C₁-C₆ alkyl, (4- to 10-membered heterocyclic) C₂-C₆ alkenyl, (4- to 10-membered heterocyclic) C₂-C₆ alkynyl, (C₆-C₁₀ aryl) C₁-C₆ alkyl, (C₆-C₁₀ aryl) C₂-C₆ alkenyl, and (C₆-C₁₀ aryl) C₂-C₆ alkynyl wherein said alkyl moieties of the foregoing groups are optionally substituted by halo or C₁-C₆ alkyl, and wherein said heterocyclic
10 moieties are optionally substituted by 4- to 10-membered heterocyclic, (4- to 10-membered heterocyclic) C₁-C₆ alkyl, or (C₆-C₁₀ aryl) C₁-C₆ alkyl, and further wherein the aryl and heterocyclic moieties of each of the foregoing groups and optional substituents is optionally substituted by 1 to 4 R⁷ groups;

R⁴ is selected from H, C₁-C₁₀ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, (C₁-C₆ alkoxy) C₁-C₆
15 alkyl, (C₁-C₆ alkylthio) C₁-C₆ alkyl, (C₅-C₈ cycloalkyl) C₂-C₅ alpha branched alkyl, C₃-C₈ cycloalkyl, C₅-C₈ cycloalkenyl, 3 to 6 membered O or S containing heterocyclic group, or phenyl, wherein each R⁴ group may be substituted with from 1 to 3 substituents independently selected from hydroxy, halo, (C₆-C₁₀ aryl) C₂-C₆ alkenyl, and C₁-C₄ alkyl;

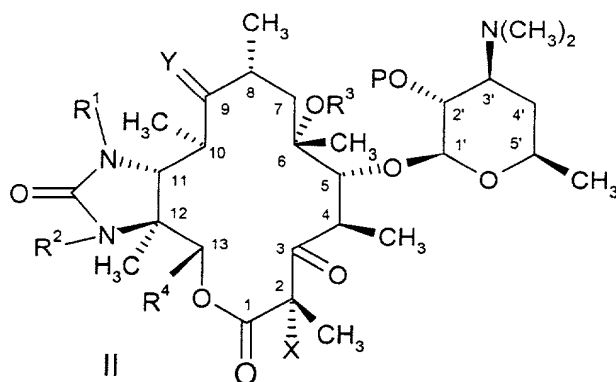
R⁵ and R¹⁰ are independently selected from H, C₁-C₆ alkyl, C₆-C₁₀ aryl, 4- to 10-
20 membered heterocyclic, (4- to 10-membered heterocyclic) C₁-C₆ alkyl and (C₆-C₁₀ aryl) C₁-C₆ alkyl, wherein said aryl and heterocyclic groups are optionally substituted by 1 to 4 R⁷ groups;

R⁶ is H, -C(O)C₁-C₆ alkyl, benzyl, benzyloxycarbonyl, or (C₁-C₆ alkyl)₃ silyl;

R⁷ is independently selected from halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, -C(O)R⁸, -C(O)OR⁸, -OC(O)R⁸, -NR⁸C(O)R⁹, -C(O)NR⁸R⁹, -NR⁸R⁹, hydroxy, C₁-C₆
25 alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₆-C₁₀ aryl, 4- to 10-membered heterocyclic, and C₁-C₆ alkoxy; and

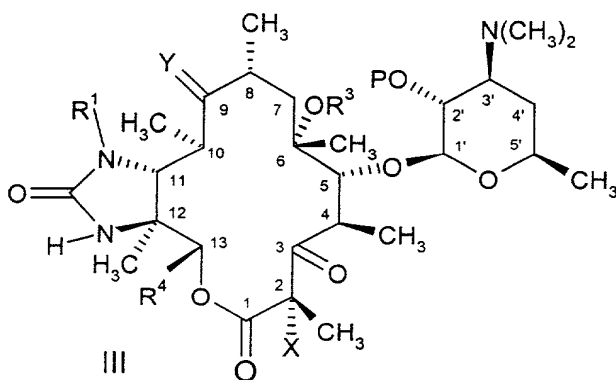
each R⁸ and R⁹ is independently selected from H, C₁-C₆ alkyl, C₆-C₁₀ aryl, and 4- to 10-membered heterocyclic;

which comprises deprotecting a compound of the formula



wherein P is a protecting group.

8. The method of claim 7 further wherein the compound of formula II is prepared by
5 treating a compound of the formula



with a strong base and a compound of formula R^2-L , where L is a leaving group.

9. A pharmaceutical composition for the treatment of a bacterial infection or a
10 protozoa infection in a mammal, fish, or bird which comprises a therapeutically effective
amount of a compound of claim 1, or a pharmaceutically acceptable salt, prodrug, or solvate
thereof, and a pharmaceutically acceptable carrier.

10. A method of treating a bacterial infection or a protozoa infection in a mammal,
fish, or bird which comprises administering to said mammal, fish or bird a therapeutically
15 effective amount of a compound of claim 1, or a pharmaceutically acceptable salt, prodrug, or
solvate thereof.